

List of Publications

Peer Reviewed Papers:

1. H. Makaruk, *Model of Conducting Materials with Group-like Local Order*, chapter in *Quantization, Coherent States and Poisson Structures*, ed. A. Strasburger, T. Ali, J.P. Antoine, A. Odzijewicz, PWN, Warsaw, (1997)
2. H.Zorski, H.Makaruk, *Static Chaos in Polymer and Biopolymer Chains*, J.Tech. Physics, **38**, (1997), 365-372
3. H. Makaruk, *Tetrad, Connection and Metric as Independent Variables in Lagrangians of Micromorphic Continua Models*, Int. J. Theor. Phys., **35** (1996), 1461-1471
4. H. Makaruk, *Polaronic Conductivity of Synthetic Metals*, Electromagnetic Phenomena Applied to Technology, (1996), 253-259
5. H.Makaruk, *Multidimensional Quantum Description of Organic Conductors*, Acta Phys. Pol. B, **27**, (1996), 2747-2754
6. H.Makaruk, *Group Models Applied in Description of Anisotropic Conducting Media*, J. Tech. Phys., **37**, (1996), 95-100
7. H.Makaruk, *Description of Dislocations: Quantum Groups Methods*, J. Tech. Phys., **37**, (1996), 85-94
8. H. Makaruk, *Dirac description of energy levels of polarons in polyaniline*, Mod. Phys. Lett. **B,9**, (1995), 543-551
9. H. Makaruk, *Spectrum of the Dirac operator on the SU(2) manifold as energy spectrum for polyaniline macromolecule*, in *Quantization, Coherent States and Complex Structures*, ed. J.-P. Antoine, Plenum, New York, (1995), 259-264
10. Z. Banach, H. Makaruk, *Relaxation Time Approximation for a Boltzmann Gas in Robertson-Walker Universe Models*, Int. J. Theor. Phys., **34**, (1995), 781-797
11. H. Makaruk, *Lie Groups and Quantum Groups Applied as a Tool in Finding Solutions in Some Field Theories*, Rep. Math. Phys., **36**, (1995), 347-353
12. H. Makaruk, R. Owczarek, *Gl(n,R) - invariant tetrad theory and its relation to purely affine formulation of general relativity*, Rep. Math. Phys., **36**, (1995), 355-363
13. M. S. Kochmanski, H. Makaruk, *Dynamics of Dipole of Finite Size in Field of Two Dipoles*, J. Tech. Phys., **36**, (1995), 256-267
14. H. Makaruk, *Universal Polyakov-like Equations*, Il Nuovo Cimento, **109 B**, (1994), 561-564
15. H. Makaruk, *Spinor Descriptions of Charged Particles on the SU(2) Group Manifol*, J. Tech. Phys., **35**, (1994), 75-78
16. H. Makaruk, *Real Lie Algebras of Dimension $d \leq 4$ which fulfil the Einstein Equation*, Rep. Math. Phys., **32**, (1993), 375-383

17. H. Makaruk, *Dynamical Reduction in Multidimensional Cosmological Models*, Gen. Rel. Grav., **23**, (1991), 1205-1230
18. V. Beiu, H.E. Makaruk, *Deeper Sparsely Nets are Optimal*, submitted to Neural Processing Letters
19. V. Beiu, H.E. Makaruk, *On Sparsely Connected Neural Networks*, submitted to IEEE Transactions on Neural Networks

Non Peer Reviewed Papers:

20. H.E. Makaruk, *Computations of Entropy Bounds: Multidimensional Geometric Methods*, International Computer Science Convencion, International Symposium of Engineering of Intelligent Systems, University of La Laguna, Tenerife, Spain, February 11-13, 1998, conference materials.
21. V. Beiu, S. Draghici, H.E. Makaruk, *On Limited Fan-in Optimal Neural Networks* Proceedings of IV Brasilian Symposium on Neural Networks (SBRN'97),
22. R.M. Owczarek, H.E. Makaruk, *Interfacial Dynamics of Abelian Domains: Differential Geometric Methods*, Proceedings 1997 International Symposium on Nonlinear Thery and Applications, NOLTA'97, Honolulu, USA, Nov.29-Dec.2,1997, **1**, 281-283
23. V. Beiu, H.E. Makaruk, *Computing n-Dimensional Volumes of Complexes: Application to Constructive Entropy Bounds*, Proceedings 1997 International Symposium on Nonlinear Theory and Applications, NOLTA'97, Honolulu, USA, Nov.29-Dec.2,1997, **1**, 417-420
24. H. Makaruk, *Conductivity of Synthetic Metals: Role of Internal Geometry*, The Digests of 4-th Japanese-Polish Joint Seminar on Electromagnetic Phenomena Applied to Technology, June 5-7, (1995)
25. H. Makaruk, *Group Models in Description of Inhomogeneous Continuous Materials*, Materials of V Symposium of the Polish Society of Applied Electromagnetics, Warsaw-Debe, 4-6 September, (1995), (in Polish)
26. H. Makaruk, *Theories with Lagrangeans Built from the Weitzenboeck's Invariants*, Materials of the Workshop Applications of the Algebraic Invariants, Warsaw, 26-27 November, (1994), (in Polish),
27. H. Makaruk, *Synthetic Metal - Polyaniline: Energy Spectrum*, materials of the IV Symposium of the Polish Society of Applied Electromagnetics, Lancut, 30-th May - 1 June, (1994), (in Polish)
28. H. Makaruk, *Fibre Bundles of Quantum Spheres*, Proceedings of The 26-th Symposium on Mathematical Physics, Torun, (Poland), December 7 - 10, (1993), ed. R.Mrugala
29. H. Makaruk, *Exact Evaluation of Energy Levels of Charge Carriers in Models of Some Conducting Materials*, materials of the III Symposium of the Polish Society of Applied Electromagnetics, Zaborow, Poland, September 6-8, (1993), (in Polish)